

CLAIMS

1 1. A chemical-analysis system comprising:
2 a longitudinally extending primary separation channel; and
3 plural pumps, said pumps being in fluid communication with
4 said channel via respective conduits, said conduits being
5 longitudinally distributed along said channel, each of said conduits
6 extending more transversely than longitudinally, said pumps having
7 respective exit nozzles, each of said pumps being adapted for
8 extracting fluid from said channel into said pump via its respective
9 conduit and for expelling fluid from said pump via its respective
10 nozzle.

1 2. A chemical-analysis system as recited in Claim 1 further
2 comprising means for parallel analysis of fluids expelled
3 concurrently from respective pumps.

1 3. A chemical-analysis system as recited in Claim 1 further
2 comprising plural secondary separation channels, each of which is
3 arranged to receive fluid expelled from a respective one of said
4 pumps.

1 4. A chemical-analysis system as recited in Claim 1 wherein each
2 of said pumps has a piezo-electric drive element that can be used in
3 expelling fluid.

1 5. A chemical-analysis system as recited in Claim 1 wherein said
2 primary separation channel employs iso-electric focusing.

1 6. A chemical-analysis system as recited in Claim 1 wherein each
2 of said pumps causes fluid expelled thereby to form into a jet upon
3 exiting a respective nozzle.

1 7. A chemical-analysis system as recited in Claim 6 further
2 comprising means for moving a collection medium relative to said
3 pumps for providing a two-dimensional time-vs-channel-location
4 distribution of said sample components.

1 8. A chemical-analysis system as recited in Claim 7 wherein said
2 collection medium is a solid substrate and said distribution
3 constitutes a microarray.

1 9. A chemical-analysis system as recited in Claim 8 wherein said
2 solid substrate is a MALDI plate.

1 10. A chemical-analysis method comprising:
2 separating sample components along a longitudinally-extending
3 primary separation channel; and
4 concurrently transversely pumping fluid from at least two
5 discrete longitudinally-separated locations along said channel so
6 that said fluid is extracted transversely into a pump and then
7 expelled from said pump through a nozzle.

1 11. A chemical-analysis method as recited in Claim 10 further
2 comprising subjecting fluids expelled from said at least two discrete
3 longitudinally-separated locations to concurrent parallel respective
4 analyses.

1 12. A chemical-analysis method as recited in Claim 10 further
2 comprising, after said pumping, separating components of fluid
3 expelled from each of said pumps using a respective secondary
4 separation channel.

1 13. A chemical-analysis method as recited in Claim 10 wherein
2 said pumping involves activating piezo-electric drive elements.

1 14. A chemical-analysis method as recited in Claim 10 wherein
2 said separating involves iso-electric focusing.

1 15. A chemical-analysis method as recited in Claim 14 further
2 comprising:

3 shifting a pH gradient in said primary separation channel; and
4 transversely pumping fluid from at least one location along said
5 channel so that said fluid is extracted transversely into a pump and
6 then expelled from said pump through a nozzle.

1 16. A chemical-analysis method as recited in Claim 10 wherein,
2 said pumping expels fluid in the form of jets.

1 17. A chemical-analysis method as recited in Claim 16 further
2 comprising collecting fluid expelled in the form of jets on a
3 collection medium moving relative to said jets to yield a two-
4 dimensional time-vs-separation-location distribution of said
5 components.

1 18. A chemical-analysis method as recited in Claim 17 wherein
2 said collection medium is a solid substrate and said distribution is a
3 microarray.

1 19. A chemical-analysis method as recited in Claim 18 wherein
2 said solid substrate is a MALDI plate.